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ABSTRACT OF THE DISCLOSURE

Disclosed are a functional material and a functional device, each of which is capable of changing a wavelength of a transmission electromagnetic wave such as transmission light or a transmission sound wave such as a transmission ultrasonic wave through the device on the basis of a signal supplied from external. Each of the functional material and the functional device includes a periodic structure having a periodicity with a unit cycle on the order of a wavelength of an electromagnetic wave or a sound wave, and means for disturbing the periodicity which is inserted in at least one portion of the periodic structure, wherein a wavelength of the electromagnetic wave or sound wave passing through the periodic structure by controlling the means on a signal supplied from external.